

Department of Sciences, Manipal University

III SEMESTER M.Sc. END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: Advanced Organic Chemistry [CHM 703]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX.MARKS: 50

Instructions to Candidates:

- ❖ Answer ANY 5 Full questions.
- ❖ Write chemical equations wherever necessary

1A. Justify the following statements;

- i. Furan is the least aromatic five membered heterocycle when compared to thiophene and pyrrole.
- ii. Juvenile hormone, Methoprene is considered as a biological pesticide.
- iii. 1*H*-Azepine is non-aromatic in nature.

1B. Explain the functions of following phytohormones with one example each;

- i) Auxins ii) Cytokinins iii) Gibberellins

1C. Discuss the following reactions:

- i) Reduction of 2-ethenylfuran with raney nickel at 125 °C
- ii) Halogenation of pyrrole
- iii) Oxidation of thiirane with sodium metaperiodate
- iv) Nucleophilic aromatic substitution in trichloro-1,3,5-triazine

3+3+4

2A. Explain the following reactions;

- i) Thermal cyclization of unsaturated diazo compounds
- ii) Desulfurization of thietane
- iii) Nucleophilic aromatic substitution in 1,3,5-triazines

2B. Discuss the following;

- i. Friedel-Crafts reaction of aziridines
- ii. Ring opening reaction of oxirane
- iii. Diels-Alder reaction of 2,3,5,6-tetrazine

2C. What are organophosphorous pesticides? Discuss the synthesis and uses of malathion, mevinphos and phorate.

3+3+4

3A. Justify the following statements;

- i) 5*H*-1,2-diazepines show a strong preference to exist as bicyclic tautomers.
- ii) Carbamate pesticides are superior to organochlorine pesticides.
- iii) Indole is a very weak base.

3B. What are the different types of insect repellants? Explain the synthesis and use of DEET. Why is Icaridin preferred over DEET as an insect repellent?

